

REMARKS

In response to the Office Action dated January 30, 2003, claims 1-14 have been amended. Claims 1-14 are active in this application, of which claims 1, 6, 8 and 13 are independent.

Based on the above Amendments and the following Remarks, Applicants respectfully request that the Examiner reconsider the outstanding objections and rejections and they be withdrawn.

Rejections Under 35 U.S.C. §103

In the Office Action, claims 1, 5 and 6 have been rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent No. 6,392,728 issued to Tanaka, *et al.* (“Tanaka”). This rejection is respectfully traversed.

Independent claim 1 recites “each color filter having a flat central portion and *a peripheral portion placed on the black matrix and thinner than the flat central portion*”. In this regard, in Fig. 3 of Tanaka, the tapered periphery portions of the colored portions 105, 106 and 107 is directly formed on the substrate 120, and *the black matrix 104 is covering the tapered periphery portions*. Thus, Tanaka fails to teach “a peripheral portion placed *on* the black matrix”.

Nevertheless, the Examiner asserted “It would have been obvious to ... combine embodiments of Tanaka ...” (Office Action, Page 2). This assertion is respectfully disagreed with because none of the embodiments teaches “a peripheral portion placed *on* the black matrix”, as recited in claim 1.

Also, the Examiner has not provided any logical and objective explanation as to how the structure shown in Fig. 1C of Tanaka would have been modified to arrive at the claimed structure, and why such modification would have been obvious. Applicant believes that it would

not have been obvious to modify the structure shown in 1C of Tanaka without changing the principal of operation of Tanaka and without rendering the teachings of Tanaka unsatisfactory for its intended purpose.

Also, the Examiner asserted “Tanaka also has a common electrode formed on the color filters”. This assertion is respectfully disagreed with because the element 109 formed on the colored portions 105, 106 and 107 is a source bus, not a common electrode. Fig. 1B of Tanaka shows a counter electrode 113 which corresponds to the claimed common electrode, and the source electrode 109 in Fig. 1B is not the counter electrode 113.

As described above, Tanaka fails to teach or suggest “a peripheral portion placed on the black matrix” and “a common electrode formed on the plurality of color filters”. Thus, it would not have been obvious to modify the teachings of Tanaka to arrive at the claimed invention defined in claim 1. Therefore, it is submitted that claim 1 is patentable over Tanaka. Claim 5 that is dependent from claim 1 would be also patentable at least for the same reason.

Independent claim 6 recites “each color filter having a flat central portion and a peripheral portion placed on the black matrix” and “forming a common electrode on the plurality of color filters”. As previously mentioned, these features are neither taught nor suggested by Tanaka, and, hence, claim 6 would be patentable over Tanaka.

Accordingly, Applicant respectfully requests that the rejection over claims 1, 5 and 6 be withdrawn.

In the Office Action, claims 2-4 have been rejected under 35 U.S.C. §103(a) for being unpatentable over Tanaka in view of U. S. Patent No. 6,271,902 issued to Ogura, *et al.* (“Ogura”). This rejection is respectfully traversed.

Claims 2-4 are dependent from claim 1. As previously mentioned, claim 1 is believed to be patentable over Tanaka. Ogura teaches a color filter having a peripheral portion that is thicker than the central portion. Since Ogura teaches away from a peripheral portion being thinner than a central portion, Ogura simply cannot be combined with Tanaka to arrive at the claimed invention. Thus, the combination of Tanaka and Ogura do not render the invention recited in claim 1 obvious. Hence, claims 2-4 that are dependent from claim 1 would be patentable.

Accordingly, Applicant respectfully requests that the rejection over claims 2-4 be withdrawn.

In the Office Action, claim 7 has been rejected under 35 U.S.C. §103(a) for being unpatentable over Tanaka in view of U. S. Patent No. 6,473,141 issued to Moseley, *et al.* (“Moseley”). This rejection is respectfully traversed.

Claim 7 stems from claim 1. As previously mentioned, claim 1 is believed to be patentable over Tanaka because Tanaka fails to teach or suggest “a peripheral portion placed on the black matrix” and “a common electrode formed on the plurality of color filters”. In this regard, Moseley is directed to a method for making a mask for a directional display but fails to cure the deficiency from the teachings of Tanaka.

Thus, it would not have been obvious to combine the teaching of Tanaka and Moseley to arrive at the invention defined in claim 1. Since claim 7 is dependent from claim 1, claim 7 would be also patentable over Tanaka and Moseley at least for the same reason. Accordingly, Applicant respectfully requests that the rejection over claim 7 be withdrawn.

In the Office Action, claims 8, 12 and 13 have been rejected under 35 U.S.C. §103(a) for being unpatentable over Tanaka in view of U. S. Patent No. 6,509,688 issued to Bae, *et al.* (“Bae”). This rejection is respectfully traversed.

Independent claim 8 recites “a plurality of color filters, each color filter having a flat central portion and *a peripheral portion placed on the data lines* and thinner than the central portion”. The Examiner is respectfully requested to refer to an example shown in Fig. 10 of the present application. It is submitted that Tanaka does not teaches or suggest “a peripheral portion placed on the data line”. Bae is directed to a pixel electrode connected to a drain electrode via a contact hole, but fails to cure the deficiency from the teachings of Tanaka.

Therefore, it would not have been obvious to combine the teaching of Tanaka and Bae to arrive at the invention defined in claim 8. Since claim 12 is dependent from claim 8, claim 12 would be also patentable over Tanaka and Bae at least for the same reason.

Independent claim 13 also recites “each color filter having a flat central portion and *a peripheral portion placed on the data lines* and thinner than the central portion”. Thus, claim 13 would be also patentable at least for the same reason. Accordingly, Applicant respectfully requests that the rejection over claims 8, 12 and 13 be withdrawn.

In the Office Action, claims 9-11 have been rejected under 35 U.S.C. §103(a) for being unpatentable over Tanaka in view of Bae, and further in view of Ogura. This rejection is respectfully traversed.

Claims 9-11 are dependent from claim 8. As previously mentioned, claim 8 is patentable over Tanaka and Bae because none of them recites “each color filter having a flat central portion and *a peripheral portion placed on the data lines* and *thinner than* the central portion”. As

previously mentioned, Ogura teaches a color filter having a peripheral portion that is thicker than the central portion. Since Ogura teaches away from a peripheral portion being thinner than a central portion, Ogura simply cannot be combined with Tanaka and Bae to arrive at the claimed invention.

Since claim 8 is patentable over Tanaka, Bae and Ogura, dependent claims 9-11 would be also patentable at least for the same reason. Accordingly, Applicant respectfully requests that the rejection over claims 9-11 be withdrawn.

In the Office Action, claim 14 has been rejected under 35 U.S.C. §103(a) for being unpatentable over Tanaka in view of Bae, and further in view of Moseley. This rejection is respectfully traversed.

Claim 14 stems from claim 13. As previously mentioned, claim 13 is patentable over Tanaka and Bae because those references fails to teach or suggest “each color filter having a flat central portion and *a peripheral portion placed on the data lines and thinner than the central portion*”.

As previously mentioned, Moseley is directed to a method for making a mask for a directional display but fails to cure the deficiency from the teachings of Tanaka and Bae. Thus, claim 13 is patentable over Tanaka, Bae and Moseley. Dependent claim 14 would be also patentable at least for the same reason.

Accordingly, Applicant respectfully requests that the rejection over claim 14 be withdrawn.

Other Matters

In this response, claims 1-14 have been amended for better wording.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, claims 1-14 are in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that any extensions of time or fees for net addition of claims are required at this moment. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 23-1951. Please credit any overpayment to deposit Account No. 23-1951.

Dong-Gyu KIM
09/977,684

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Hae-Chan Park', written in a cursive style.

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APPENDIX A

Please amend claims 1-14, as follows. The entire set of pending claims, including the “clean” version of the amended claims, is provided in the APPENDIX B.

1. (Amended) A [color filter substrate for a] liquid crystal display, comprising:
a substrate;
a black matrix formed on the substrate;
a plurality of color filters formed on the substrate [with the black matrix], each color filter having a flat central portion[,] and a peripheral portion placed on the black matrix and thinner than the flat central portion [with a thickness smaller than the central portion]; and
a common electrode formed on the plurality of color filters.
2. (Amended) The [color filter substrate] liquid crystal display of claim 1, wherein [the neighboring color filters are overlapped with each other] the plurality of color filters comprise a first color filter and a second color filter neighboring and overlapping the first color filter over the black matrix.
3. (Amended) The [color filter substrate] liquid crystal display of claim 2, wherein [the neighboring color filters are structured such that the peripheral portion of the overlying color filter is overlapped with the peripheral portion of the underlying color filter] the peripheral portion of the second color filter overlaps the peripheral portion of the first color filter.

4. (Amended) The [color filter substrate] liquid crystal display of claim 2, wherein [the neighboring color filters are structured such that the peripheral portion of the overlying color filter is overlapped with the peripheral portion of the underlying color filter as well as partially with the central portion of the underlying color filter] the peripheral portion of the second color filter overlaps the peripheral portion and the central portion of the first color filter.

5. (Amended) The [color filter substrate] liquid crystal display of claim 1, wherein [the neighboring color filters are spaced apart from each other with a predetermined distance] the plurality of color filters comprise a first color filter and a second color filter spaced apart from the first color filter with a predetermined distance therebetween.

6. (Amended) A method [of] for fabricating [a color filter substrate for] a liquid crystal display, the method comprising the steps of:
forming a black matrix on a substrate;
sequentially forming a plurality of color filters on the substrate [with the black matrix], each color filter having a flat central portion[,] and a peripheral portion placed on the black matrix [with a thickness smaller] and thinner than the central portion; and
forming a common electrode on the plurality of color filters.

7. (Amended) The method of claim 6, wherein [the color filters are formed using a mask differentiated in the light transmission while bearing a transparent pattern, an opaque pattern and a semitransparent pattern, the semitransparent pattern of the mask being placed over

the peripheral portion of the color filter during the formation of the color filter] the step of sequentially forming the plurality of color filters comprises the steps of:

forming a color filter material over the substrate; and

patterning the color filter material by using a mask having a transparent pattern, a semitransparent pattern and an opaque pattern,

wherein the semitransparent pattern is used for forming the peripheral portion of each color filter.

8. (Amended) A [thin film transistor array substrate for a] liquid crystal display, [the thin film transistor array substrate] comprising:

a substrate;

a plurality of gate lines formed on the substrate;

a plurality of data lines crossing over the gate lines [while defining pixel regions];

a plurality of pixel regions defined by the plurality of gate lines and the plurality of data lines;

a thin film transistor formed at each pixel region;

a plurality of color filters, each color filter having a flat central portion[,] and a peripheral portion placed on the data lines [with a thickness smaller] and thinner than the central portion;

a plurality of contact holes exposing the drain electrodes; and

pixel electrodes connected to the drain electrodes through the contact holes.

9. (Amended) The [thin film transistor array substrate] liquid crystal display of claim 8, wherein the [neighboring color filters are overlapped with each other] plurality of color

filters comprise a first color filter and a second color filter neighboring and overlapping the first color filter over the data lines.

10. (Amended) The [thin film transistor array substrate] liquid crystal display of claim 9, wherein [the neighboring color filters are structured such that the peripheral portion of the overlying color filter is overlapped with the peripheral portion of the underlying color filter] the peripheral portion of the second color filter overlaps the peripheral portion of the first color filter.

11. (Amended) The [thin film transistor array substrate] liquid crystal display of claim 10, wherein [the neighboring color filters are structured such that the peripheral portion of the overlying color filter is overlapped with the peripheral portion of the underlying color filter as well as partially with the central portion of the underlying color filter] the peripheral portion of the second color filter overlaps the peripheral portion and the central portion of the first color filter.

12. (Amended) The [thin film transistor array substrate] liquid crystal display of claim 8, wherein [the neighboring color filters are spaced apart from each other with a predetermined distance] the second color filter is spaced apart from the first color filter with a predetermined distance therebetween.

13. (Amended) A method [of] for fabricating [a thin film transistor array substrate for] a liquid crystal display, the method comprising the steps of:

[forming a substrate such that the substrate has a plurality of gate lines, a plurality of data lines crossing over the gate lines while defining pixel regions, And thin film transistors provided at the pixel regions while being electrically connected to the gate lines and the data lines;]

forming a plurality of gate lines on a substrate;

forming a plurality of data lines on the substrate, wherein the plurality of gate lines and the plurality of data lines define a plurality of pixel regions;

forming a thin film transistor in each pixel regions;

sequentially forming a plurality of color filters, each color filter having a flat central portion[,] and a peripheral portion placed on the data lines [with a thickness smaller] and thinner than the central portion;

forming a plurality of contact holes [such that the contact holes] to expose drain electrodes of the thin film transistors; and

forming a plurality of pixel electrodes connected to the drain electrodes through the contact holes.

14. (Amended) The method of claim 13, wherein [the color filters are formed using a mask differentiated in the light transmission while bearing a transparent pattern, an opaque pattern and a semitransparent pattern, the semitransparent pattern of the mask being placed over the peripheral portion of the color filter during the formation of the color filter] the step of sequentially forming the plurality of color filters comprises the steps of:

forming a color filter material over the substrate; and

patterning the color filter material by using a mask having a transparent pattern, a semitransparent pattern and an opaque pattern,

wherein the semitransparent pattern is used for forming the peripheral portion of each color filter.